



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inter Application of

: Group Art Unit: 2624

Peker, et al.

:
:
:

Serial No.: 09/715,639

: Examiner: W. Chen

:

Filed: November 17, 2000

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For: ADAPTIVELY PROCESSING A VIDEO BASED ON CONTENT
CHARACTERISTICS OF FRAMES IN THE VIDEO

PETITION TO WITHDRAW HOLDING OF ABANDONMENT BASED ON EVIDENCE
THAT A REPLY WAS TIMELY MAILED OR FILED
(MPEP 711.03(c)(I)(B))

MAIL STOP: PETITIONS
Commissioner for Patents
Box 1450
Alexandria, VA 22313-1450

07/05/2005 BABRAHA1 00000061 500749 09715639

01 FC:1453 1500.00 DA

Date of Deposit: June 29, 2005

I hereby certify that this paper or fee is being deposited with the U.S. Postal Service as FIRST CLASS MAIL addressed to: Mail Stop: Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Clifton D. Mueller

Name of Depositor

Clifton D. Mueller

Signature

Sir:

This Petition is in response to a Notice of Abandonment mailed on June 10, 2005.

REMARKS

This Petition is to request (i) that above referenced application, which was abandoned on June 10, 2005 due to the failure to timely respond to a Non-final Office Action dated April 21, 2004, and having a response time up to and including July 21, 2004, be revived; (ii) that the petition fee set forth under **MPEP 711.03(c)II** submitted herewith be accepted, and (iii) that the AMENDMENT IN RESPONSE TO THE NON-FINAL OFFICE ACTION submitted herewith be accepted.

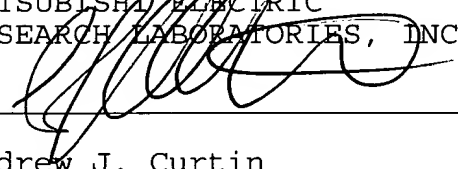
- 1.) A Non-final Office Action for the present application was mailed by the U.S.P.T.O. (the "Office") on April 21, 2004.
- 2.) An amendment in response to the Non-final Office Action was mailed by the Applicants on July 19, 2004. The response also included a return postcard, which was stamped by U.S.P.T.O as received on July 21, 2004.
- 3.) A Notice of Abandonment was mailed by the Office on June 10, 2004.
- 4.) Copies of the Notice of Abandonment, the Return Postcard, and the AMENDMENT IN RESPONSE TO THE NON-FINAL OFFICE ACTION are submitted herewith.
- 5.) The Assistant Commissioner for Patents is hereby authorized to charge Account No. 50-0749 for the Petition Fee under 37 CFR 1.17(m) in the amount of \$130.00.
- 6.) Because the application was filed after June 8, 1995, no terminal disclaimer or disclaimer fee is required.

In view of the foregoing, it is respectfully submitted that the response was timely filed. Accordingly, it is respectfully requested that (i) the holding of abandonment be withdrawn, and (ii) the active status of the above referenced application be acknowledged.

It is respectfully requested that the undersigned be contacted by telephone at the below listed telephone number, in order to expedite resolution of any remaining issues, if any further comments, questions or suggestions arise in connection with the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including petition and extension of time fees, to Deposit Account 50-0749 and please credit any excess fees to such deposit account.

Respectfully submitted,
MITSUBISHI ELECTRIC
RESEARCH LABORATORIES, INC.



Andrew J. Curtin
Registration No. 48,485

201 Broadway, 8th Floor
Telephone (617)-621-7573
DATE: September 8, 2004



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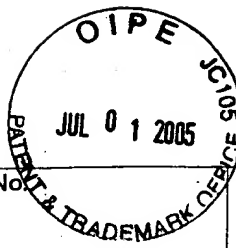
APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,639	11/17/2000	Kadir A. Peker	MH-5061	8846
7590	06/10/2005			
Patent Department Mitsubishi Electric Research Laboratories Inc 201 Broadway 8th Floor Cambridge, MA 02139			EXAMINER CHEN, WENPENG	
			ART UNIT 2624	PAPER NUMBER



JUN 13 2005

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



Notice of Abandonment

Application No.

09/715,639

Examiner

Wenpeng Chen

Applicant(s)

PEKER ET AL.

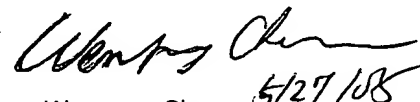
Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 21 April 2004.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____. The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:


Wenpeng Chen
Primary Examiner
Art Unit: 2624

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.



ADAPTIVELY PROCESSING A VIDEO BASED ON CONTENT

Title: CHARACTERISTICS OF FRAMES IN THE VIDEO

Applicant: PAULI ET AL

Filed: 11/17/2000

Application No. 09/25,639

Patent No. _____

Docket No. MH-5061

Enclosed is the following:

☐ Transmittal Letter in triplicate;

☐ Application including Pgs. _____

claims and Abstract;

☐ Declaration and Power of Attorney;

☐ Informal/Formal Drawings

_____ Sheets of Figs. _____;

☐ Letter to Chief Draftsman;

☒ Amendment

☐ Information Disclosure Statement, Form 1449;

_____ refs;

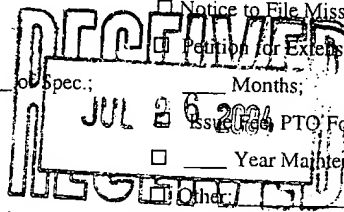
☐ Assignment, Recordation Cover Sheet;

Date Mailed: 7-19-2004

Date Due: 7-21-2004

Initials: SL

Express Mail Receipt No. _____



☐ Notice to File Missing Parts;

☐ Petition for Extension of Time for

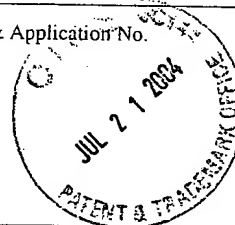
Months;

☐ Issued PTO Form 85B&C;

☐ Year Maintenance Fee

☐ Other

Receipt Date & Application No.

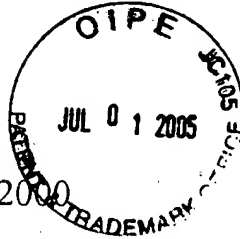


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Peker, et al.

Serial No.: 09/715,639

Filed: November 17, 2000



Group Art Unit: 2624

Examiner: W. Chen

Title: ADAPTIVELY PROCESSING A VIDEO BASED ON CONTENT
CHARACTERISTICS OF FRAMES IN THE VIDEO

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deposited with the U.S. Postal
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for Patents, P.O. Box 1450,
Alexandria, VA 22313-1450

on

July 13, 2004

Signature: Andrew J. Curtin

AMENDMENT

Commissioner for Patents
Box 1450
Alexandria, VA 22313-1450

Sir:

This Amendment is in response to a non-final office action dated April 21, 2004.

In the Specification

Please amend the paragraph beginning at line 15 of page 12 as follows:

-- The guaranteed minimum motion activity method can now proceed as follows. First we assign actual motion activity values, in terms of a continuous descriptor, to each level of motion activity. Second, we express the average motion activity of the input video as a temporal histogram of the motion activity as described in U.S. Patent Application Sn. ~~09/406,444~~ 10/217,918 "*Activity Descriptor for Video Sequence*," filed by Divakaran et al. on August 13, 2002, and incorporated herein by reference, which is a continuation of now abandoned U.S. Patent Application Sn. 09/406,444, filed on September 27, 1999, ~~incorporated herein by reference~~. The temporal histogram directly indicates what frames of the input video have a level of motion activity that is lower than the targeted activity in a quantized fashion so the above classification can be performed. Third, we associate the temporal histogram with the actual motion values, and apply the guaranteed minimum activity method as expressed in the above formulations to determine the relationship between the length of the output video and the targeted level of motion activity.--

Please amend the paragraph beginning at line 17 of page 8 as follows:

-- Therefore, the system 100 samples frames 211 at a higher rate, and frames 212 are sampled at a lower rate. In other words, the sampling rate (down-sampling or up-sampling) is adaptive to the measured level of motion activity. Low-level activities are sped up, and high-level activities are sampled at a normal rate or slowed down. In fact, if the level of motion activity is too high to enable normal

perception, then the frames ~~211~~ 212 can be up-sampled. For example, a one second sequence of thirty frames can be expanded to a ten second sequence of three-hundred frames by showing each frame ten times.--

In the Claims

1 1. (currently amended) A method for temporally processing an input video
2 including a plurality of input frames, each of the input frames having an
3 associated input frame play time, and the input video having a total input
4 video play time that is a sum of the input frame play times of all of the input
5 frames, comprising:
6 classifying each of the plurality of input frames according to a content
7 characteristic of each of the input frames; and
8 allocating an output frame play time to each of the plurality of input
9 frames that is based on the ~~classified~~ content characteristic of each of the
10 input frames to generate a plurality of output frames.

1 2. (original) The method of claim 1 wherein the content characteristic is
2 based on low-level features of each of the input frames.

1 3. (currently amended) The method of ~~claim 1~~ claim 2 wherein the low-level
2 features are selected from a group consisting of motion vectors, color,
3 texture, brightness, contrast, spectral parameters, local and global motion,
4 activity, trajectory, speed, acceleration, object shape, object size, number of
5 objects, number of faces, pitch, volume, tempo, and combinations thereof.

1 4. (original) The method of claim 1 wherein the content characteristic is
2 based on high-level features of each of the input frames.

1 5. (currently amended) The method of ~~claim 1~~ claim 4 wherein the high-level
2 features are selected from a group consisting of genre, dramatic intensity,
3 humor content, action level, beauty, lyricism, musical intensity, educational
4 quality, profundity, nudity, linguistic class, and combinations thereof.

1 6. (original) The method of claim 1 wherein the allocating of the play time is
2 dynamically varied while processing the video.

1 7. (original) The method of claim 1 wherein the allocated output frame play
2 time of each of the output frames is determined by sampling the input frames.

1 8. (original) The method of claim 7 wherein the sampling is a down-sampling
2 of the input frames.

1 9. (original) The method of claim 7 wherein the sampling is an up-sampling
2 of the input frames.

1 10. (original) The method of claim 9 wherein up-sampled output frames are
2 interpolated from the input frames.

1 11. (original) The method of claim 7 wherein the sampling is a combination
2 of down-sampling and up-sampling of the input frames.

1 12. (original) The method of claim 1 wherein the allocated output frame play
2 time of each of the output frames is determined by an output frame rate of the
3 output frame.

1 13. (original) The method of claim 12 wherein the output frame rate is
2 increased for selected input frames.

1 14. (original) The method of claim 12 wherein the output frame rate is
2 decreased for selected input frames.

1 15. (original) The method of claim 1 further comprising:
2 measuring the content characteristics of each of the plurality of input
3 frames to determine the classification.

1 16. (original) The method of claim 15 further comprising:
2 computing a statistical moment for the ~~measured~~ content
3 characteristics to determine the classification.

1 17. (currently amended) The method of claim 1 wherein the allocation of
2 play time is based on a constant level of motion activity in the ~~output video~~
3 plurality of output frames.

1 18. (currently amended) The method of claim 1 wherein the allocation of
2 play time is based on a guaranteed minimum level of activity in the ~~output~~
3 video plurality of output frames.

1 19. (original) The method of claim 1 further comprising:
2 partitioning the input video into a plurality of segments, and
3 processing the input video on a per segment basis.

1 20. (currently amended) The method of claim 1 wherein still frames are
2 selected for the ~~output video~~ plurality of output frames when the allocated
3 output frame play time exceeds a temporal Nyquist limit.

1 21. (currently amended) The method of claim 1 further comprising:
2 allocating a total output video play time for an output video; and
3 allocating the output frame play times so that a sum of the output
4 frame play times of the plurality of output frames is equal to the total output
5 video play time of the output video.

1 22. (currently amended) The method of ~~claim 1~~ claim 21 wherein the
2 allocated play time of a particular frame can range on a continuum from zero
3 time to a length of time of the output video.

1 23. (currently amended) The method of ~~claim 1~~ claim 21 wherein the
2 allocation of play time is based on a motion activity in the output video, and a
3 measure of motion activity is an average of magnitudes of motion vectors of
4 the frames.

1 24. (original) The method of claim 23 where the average motion vector
2 magnitude \hat{r} of the input video of N frames is expressed as:

3
$$\hat{r} = \left(\frac{1}{N}\right) \sum_{i=1}^N r_i,$$

4 where an average motion vector magnitude of frame i is r_i .

1 25. (original) The method of claim 24 wherein a relationship between a
2 length L_{output} of the output video and a length L_{input} of the input video is
3 expressed as

4
$$L_{output} = \frac{\hat{r}}{r_{target}} L_{input}$$

5 for a target level of motion activity r_{target} in the output video.

1 26. (original) The method of claim 25 further comprising:

2 classifying all of frames j of the input video having the motion activity
3 equal to or higher than a targeted level of minimum motion activity into a
4 first set S_{higher} having a length L_{higher} ;

5 classifying all of frames k of the input video having the motion activity
6 lower than the targeted level of minimum motion activity into a second S_{lower}
7 having a length L_{lower} ;

8 summing $L_{higher} + L_{lower}$ to determine a L_{input} of the input video to
9 determine a length of the output video by

10
$$L_{output} = \left(\frac{\hat{r}_{lower}}{r_{target}} \right) L_{lower} + L_{higher} .$$

1 27. (currently amended) A system for temporally processing an input video
2 including a plurality of input frames, each of the input frames having an
3 associated input frame play time, and the input video having a total input
4 video play time that is a sum of the input frame play times of all of the input
5 frames, comprising:

6 means for classifying each of the plurality of input frames according to
7 a content characteristic of each of the input frames;

8 means for allocating a total output video play time for an output video;
9 and
10 means for allocating an output frame play time to each of the plurality
11 of input frames that is based on the ~~classified~~ content characteristic of each of
12 the input frames to generate a plurality of output frames so that a sum of the
13 output frame play times of the plurality of output frames is equal to the total
14 output video play time of the output video.

Remarks

Claims 1-27 are pending in the application. Claims 1-27 are rejected. Claims 1, 3, 5, 17-18, 20-23, and 27 are amended. The Specification is amended. No new subject matter is added. The rejections are respectfully traversed.

The Specification is amended to overcome the Examiner's objections.

Claims 3, 5, 17, 18, 20, and 22-27 are rejected under 35 U.S.C. 112, second paragraph as being indefinite.

Claims 3, 5, 17, 18, 20, 22, 23 and 27 are amended to overcome the rejections.

Claim 1 is amended to more distinctly claim the invention.

Claims 1-3, 6-15, 19, 21, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Abdel-Mottaleb (U.S. 6,424,789 – “Abdel”).

The invention is frame based. Each frame of an input video has an associated input frame play time, and the input video has a total input video play time that is a sum of the input frame play times of all of the input frames. ***Each of the input frames of the input video is classified*** according to a selected content characteristic. An output frame play time is ***allocated to each*** of the plurality of input frames based on the content characteristic of each of the input frames to generate a plurality of output frames.

Abdel measures differences between frames in a shot to classify the shot. The invention looks at only one frame at a time to classify the frame.

To those of ordinary skill in the art, it is well known that there is a huge difference between a 'shot' as described by Abdel, and a 'single frame' as claimed. Abdul correctly defines a "shot" (or scene) consisting of a **sequence of uninterrupted related frames,**" see Abstract. Applicants assert that a 'sequence' as described by Abdul can never be a single frame as claimed.

That is, a shot includes **all** frames from when a shutter of a camera opens, until the shutter closes. At typical frame rate of 30 or 60 frames per second, it would be impossible to perceive a shot as described by Abdel if it were to include only a single frame as claimed. Typically, perceivable 'shots' must last from at least several seconds to several minutes. This means that 'shots' typically include at least hundreds if not thousands of frames.

Now, Abdul determines a level of activity in a shot, and then performs the selected speed change special effect by adding frames or deleting frames to produce a modified shot, see Abstract. The invention operates in each frame as it comes by. In the most extreme case, and a most liberal interpretation of Abdel the shot must include at least a first frame and a second frame, see column 2,

45 The video processing device comprises an image processor
capable of identifying the at least one shot and determining
a first activity level within at least a first portion of the at
least one shot, wherein the first activity level indicates a rate
of change of video content between at least a first frame and
50 a second frame in the at least a first portion. The image
processor performs the selected speed change special effect
by one of adding frames and deleting frames in the at least
a first portion in response to the first activity level
determination, thereby producing a modified at least one
55 shot.

There is a serious problem with the Abdel system and method. Abdel can **never** operate in real time. This is obvious. Abdel needs to process a shot before a new shot can be created. Thus, if the shot is a minute long, the viewer sees nothing until at least a minute later, when the result of his processing becomes available.

In contrast, the invention processes the video and frame at the same time. As each input frame is classified, play time is allocated to each corresponding output frame, and the output can be viewed, as is, before any more frames need to be processed, as in Abdel.

Abdel is shot based. Abdel classifies shots, see col. 7, lines 33-38, below:

The shot frames are
examined to determine the relative degree of movement
between successive frames and/or across a longer series of 35
frames within the shot. The shot (or a sub-portion of the
shot) may then be classified according to the level of activity
in the shot (or sub-portion).

See also, Figures 3, 4A and 4B. Particularly, see element 320 of Figure 3, element 415 of Figure 4A, and element 460 of Figure 4B, each describing shot based classification.

In claims 2-3, the content characteristic is based on low-level features of each of the input frames. The low-level features are selected from a group consisting of motion vectors, color, texture, brightness, contrast, spectral parameters, local and global motion, activity, trajectory, speed, acceleration, object shape, object size, number of objects, number of faces, pitch, volume, tempo, and combinations thereof. The low level features for a frame are derived from each input frame for each corresponding output frame in the invention. Abdel measures frame differences in shots, which is not what is claimed.

In claim 6, the allocating of the play time is dynamically varied while processing the video. In claim 21, a total output video play time is allocated for an output video and the output frame play times are allocated so that a sum of the output frame play times of the plurality of output frames is equal to the total output video play time of the output video. As stated above, **play time** is *frame based* in the invention. Abdul **increases the speed of a shot**, see col. 8,

35 Once the relative amount of movement within the shot is classified as high to low, the speed of the shot is increased in relation to the original shot by saving sub-samples of frames at a high or low rate. If the shot is classified as low-level activity, the sub-sample occurs at a comparatively low rate (process step 420). The low sub-sample rate results
40 in a relatively smaller number of frames being saved and a relatively larger number of frames being dropped or deleted from the original shot. For example, if the activity level is low in a (or a sub-portion of the shot), image processor 120 may save one out of every three frames and drop the other
45 two frames.

Above, Abdel classifies the amount of movement in a shot. This is further described in col. 9:

minutes. The rate at which frames are dropped during the fast-forward speed change is then initially calculated by image processor 120 in order to comply with the five minute time constraint. Image processor 120 may then loop through the video clip one or more times to make the final modified video clip play in five minutes or less. Image processor 120 can apply different weighting factors to high-activity level and low-activity level portions of the video clip in order to meet with the specified time duration.

50

There, Abdel must "loop through the video clip one or more times" to meet the 5 minute constraint. This is a further indication that Abdel cannot be a real time process, and that Abdul is a multi-pass operation. In contrast, the invention is a single pass operation.

In claim 7, the allocated output frame play time of each of the output frames is determined by sampling the input frames. In claim 8, the sampling is a down-sampling of the input frames. In claim 9, the sampling is an up-sampling of the input frames. In claim 10, up-sampled output frames are interpolated from the input frames. In claim 11, the sampling is a combination of down-sampling and up-sampling of the input frames. The invention determines the allocated output frame play time for each output frame based on the classified content characteristic of each of the input frames. Abdel never determines play time. Abdel determines activity for an entire sequence of frames in a shot and adds or drops frames based on the activity. Abdel can never anticipate what is claimed.

In claim 12, the allocated output frame play time of each of the output frames is determined by an output frame rate of the output frame. In claim 13, the output frame rate is increased for selected input frames. In claim 14, the output frame rate is decreased for selected input frames. The invention determines output frame play

time for *each output frame*. Abdel never changes the frame rate for individual frames as claimed. Abdel determines whether the shot is to be played in fast forward or slow motion, and adds or drops frames of the shot to achieve a desired degree of motion, see col. 6 below:

20 Since the
video transfer rate of the image medium is constant, the
degree of motion in these shots can be slowed by the
duplication and addition of selected frames. Conversely, the
motion associated with these shots can be increased through
25 the deletion or removal of selected frames all in accordance
with the principles of the present invention.

Claimed is allocating a rate on a per frame basis. Abdel adds or drops frames to control a degree of motion in the shots, which has nothing to do with a rate of a frame.

In claim 15, the content characteristics of each of the plurality of input frames is measured to determine the classification. Each frame is measured to classify the frame. Abdel classifies a shot. These are totally different operations.

In claim 19, the input video is partitioned into a plurality of segments, and the input video is processed on a per segment basis. Therefore, different segments may be processed according to different selected content characteristics. The input video is still processed on a frame basis, which is never described by Abdel.

In claim 21, a total output video play time is allocated for an output video and the output frame play times are allocated so that a sum of the output frame play times of the plurality of output frames is equal to the total output video play time of the

output video. As described in col. 9, Abdel must “loop through the video clip one or more times” to meet the 5 minute constraint. Abdul is a multi-pass operation. In contrast, the invention is a single pass operation. Abdel cannot anticipate the invention.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel in view of Mehrotra, et al. (U.S. 6,665,423 – “Mehrotra”).

Mehrotra generates descriptions of video *objects* using high-level and low-level time varying characteristics of the objects. The invention generates output frames having an output frame play time based on the selected content characteristic of each of the input frames, which can be high-level features of each of the input frames selected from a group consisting of genre, dramatic intensity, humor content, action level, beauty, lyricism, musical intensity, educational quality, profundity, nudity, linguistic class, and combinations thereof. Mehrotra never produces output frames. Mehrotra uses features to generate descriptions of video objects. The invention uses features to produce output frames. Mehrotra has nothing to do with what is claimed.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel in view of Park, et al. (U.S. 6,597,738 – “Park”).

Park generates motion descriptors by measuring motion across an entire video or respective frames using various first order statistics, see col. 22, below.

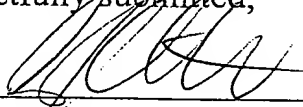
35 Next, the motion direction descriptor is to describe sta-
tistic characteristics of motion direction with relation to
motion data for respective images or the whole images in the
time which is intended by the time descriptor, and comprised
of a motion direction average, central moment for the
40 average and standard deviation, dominant motion direction,
accumulated motion histogram and direction data.

The invention determines higher order statistics for the measured characteristics of each frame to determine the classification for each frame to generate an output frame. Generating motion descriptors has nothing to do with generating an output frame having an output frame play time based on the selected content characteristic of an input frame as claimed. Park's motion descriptors can never be used to make the invention obvious.

All rejections have been complied with, and applicant respectfully submits that the application is now in condition for allowance. The applicant urges the Examiner to contact the applicant's attorney at phone and address indicated below if assistance is required to move the present application to allowance. Please charge any shortages in fees in connection with this filing to Deposit Account 50-0749.

Mitsubishi Electric
Research Laboratory, Inc.
201 Broadway
Cambridge MA, 02139
(617) 621-7539

Respectfully submitted,

By: 
Andrew J. Curtin
Reg. No. 48,485
Attorney for Assignee